Sure. Here is an explanation of one-way ANOVA according to 5 marks:

What is one-way ANOVA?

One-way ANOVA, or analysis of variance, is a statistical test that is used to compare the means of two or more groups. It is a hypothesis test that determines whether there is a statistically significant difference between the means of the groups.

How does one-way ANOVA work?

One-way ANOVA works by comparing the variance within the groups to the variance between the groups. If the variance between the groups is significantly greater than the variance within the groups, then it is likely that there is a real difference between the means of the groups.

What are the assumptions of one-way ANOVA?

There are several assumptions that must be met in order for one-way ANOVA to be valid. These assumptions include:

- The data must be normally distributed.
- The variances of the groups must be equal.
- The data must be independent.

How to interpret the results of one-way ANOVA?

The results of one-way ANOVA are typically reported in a table that shows the mean, standard deviation, and F-statistic for each group. The F-statistic is used to determine whether there is a statistically significant difference between the means of the groups.

If the F-statistic is statistically significant, then it is likely that there is a real difference between the means of the groups. However, it is important to note that one-way ANOVA does not tell you which groups are different from each other. To determine which groups are different, you can use a post hoc test.

Here are some examples of one-way ANOVA:

- A researcher wants to know if there is a difference in the average test scores of students who took different math classes.
- A company wants to know if there is a difference in the average productivity of employees who work different shifts.

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- A doctor wants to know if there is a difference in the average blood pressure of patients who take different medications.

I hope this helps! Let me know if you have any other questions.